

REMARKS

Claims 1-10 have been examined. With this Amendment, Applicant adds claims 11-15.
Claims 1-15 are pending in the Application.

1. Formalities

Applicant thanks the Examiner for acknowledging the claim for foreign priority and for confirming that the certified copy of the priority document has been received.

Applicant thanks the Examiner for initialing the references listed on form PTO-1449 submitted with the Information Disclosure Statement filed on April 13, 2000.

2. Drawings

The Examiner has objected to the drawings under 37 C.F.R. § 1.83(a) for allegedly failing to show every feature of the invention specified in the claims. Specifically, the Examiner alleges that the methods in claims 1 and 2 and the solid-state detector of claims 5, 6, 7 and 8 are not shown in the drawings.

With respect to the method claims 1 and 2, Applicant submits that one skilled in the art would clearly see that every feature of these claims are shown in the non-limiting embodiments depicted in Figures 1-3.

Claim 1:

Claim 1 recites "A pixel signal correction method for correcting output pixel signals from a solid-state detector [*Fig. 1, element 1 is a solid-state detector outputting signal S1*] which detects visible light or

radiation [*Fig. 2, rays 5 are the visible light or radiation*] and obtains pixel signals each representing a signal value of a pixel, wherein said correction is made so that the signal value of each pixel signal is set at a saturation level [*Fig. 1, correction means 17 represents circuitry to make corrections to signal S1 for each pixel*] when light or radiation is projected onto said solid-state detector at a level at which the highest one of the output pixel signals before the correction reaches the saturation level [*Fig. 2, rays 5 are projected onto detector 1*].

Claim 2:

Claim 2 recites that “ A pixel signal correction method for correcting output pixel signals from a solid-state detector [*Fig. 1, element 1 outputting signal S1*] which detects visible light or radiation [*Fig. 2, rays 5 are the visible light or radiation*] and obtains pixel signals each representing a signal value of a pixel, wherein a greatest pixel signal value of the output pixel signals is determined [*Fig. 4, circuit 42 determines the greatest pixel signal value*] when light or radiation is projected onto said solid state detector at a level at which any one of the output pixel signals of said detector before the correction is at a level lower than a saturation level [*Fig. 2, rays 5 are projected onto detector 1*], and said correction is made for each of said output pixel

signals so that the signal value of each pixel is set at a value which is equal to or greater than said greatest pixel signal value [*Fig. 4, correction means 41 makes correction for to signal S1 for each pixel*].

With respect to claims 5, 6, 7 and 8, Applicant is submitting informal drawings including figures 6-9 for the Examiner to review. If acceptable, Applicant will file formal drawings. Applicant submits that the figures reflect the description in the Specification as filed (page 15, line 26 to page 22, line 2), therefore, no new matter has been added.

3. Specification

The Examiner has objected to the specification because it allegedly contains many grammatical errors. Applicant has enclosed a substitute specification which obviates the objection. Applicant submits that no new matter has been added.

4. Claim Objections

The Examiner has objected to claims 1-10 because of grammatical errors. Applicant submits that the modifications to the claims obviate the objection.

5. Claim Rejections Under 35 U.S.C. § 112:

The Examiner has rejected claims 1-10 under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention.

The Examiner's specific objections are as follows:

1. The term “radiation” is unclear and the Examiner is interpreting it to mean “electromagnetic radiation.”
2. The phrase “a maximum value” is unclear and the Examiner is interpreting it to mean the value equal to the largest of the pixel signals.
3. The phrase “pixels signals each representing a signal value of each pixel” render the claim indefinite because each pixel is representative of all the pixels. The Examiner is interpreting the phrase to read “pixels signals each representing a signal value of a pixel.”
4. The phrase “the signal value” has insufficient antecedent basis.

With respect to the term “radiation” (item 1), Applicant traverses the rejection. Applicant submits that the word radiation is not unclear to one skilled in the art and that the specification (page 1, lines 13-15) fully supports the fact that the present invention relates to any “radiation solid-state detector which detects radiation and outputs an image signal.” Therefore, the present invention is not limited to solid-state detectors that use only light or electromagnetic radiation.

With respect to items 2-4, Applicant submits that the modifications to the claims obviate the objections.

6. Claim Rejections under 35 U.S.C. § 103:

The Examiner has rejected claims 1-4, 9 and 10 under 35 U.S.C. § 103(a) as being unpatentable over Nakamura et al. (US 5,289,286) [“Nakamura”]. For at least the following reasons, Applicant traverses the rejection.

Nakamura discloses an image correction apparatus that will correct for variations in pixel signals for a sensing device whose output varies natural-logarithmically to the amount of light received (col. 4, lines 12-27). Nakamura discloses irradiating a solid-state image sensing device with a uniform light to provide a reference signal which is then used to correct for the inequality in the sensitivity of the pixels (col. 6, line 44 to col. 7, line 15).

Claim 1 recites a method “for correcting output pixel signals from a solid-state detector” that corrects the pixel signals “so that the signal value of each pixel is set at a saturation level when ... the highest one of the output pixel signals before the correction reaches the saturation level.” The Examiner alleges that Nakamura discloses a method to correct the output signals from an imaging device. The Examiner concedes that Nakamura does not disclose the intensity of the light or radiation to be used but alleges it would have been obvious to one of ordinary skill in the art in order to calibrate the pixels at any arbitrary light level.

Applicant submits that the present invention is non-obvious over the cited art for at least the following reasons:

A non-limiting embodiment of the invention does the following:

1. In the case where the light or radiation projected on the detector is of the level that makes the highest one of the output pixel signals reach the saturation level, the output pixel signals of the individual pixels are corrected so that they are all set at the saturation level.
2. In the case where the light or radiation projected on the detector is of the level that makes the highest one of the output pixel signals stay below the saturation level, the

output pixel signals of the individual pixels are corrected so that they are all set at the same value which is equal to or greater than the value of the highest one of the output pixel signals before correction.

In both cases, the pixel signals are all corrected to a uniform value. A graphical illustration of the above cases is enclosed for the Examiner's convenience in the Appendix. The features described above solve the problem of the prior art described in page 5, line 7 to page, 7 line 1 of the present Specification. Because Nakamura is silent on the problem of saturation, Applicant submits that the method of Nakamura would suffer a problem similar to the one described above.

In addition, the Examiner has not made a prima facie case of obviousness because Nakamura does not disclose or even remotely suggest that the uniform reference light may have an intensity that results in saturation. Applicant submits that optimizing is only obvious for variables that the art recognizes as a result-effective characteristic. MPEP 2144.05.

Nakamura does not disclose using an intensity level for the reference light or radiation that is at the saturation level of the pixels. In fact, when Nakamura does disclose a reference level, it is clearly below the saturation level of the pixels (curve B of Figure 6, col. 6, lines 44-64). Therefore, Applicant submits that Nakamura does not provide the motivation or suggestion for one skilled in the art to adjust the intensity of the light or radiation as required by the claimed combination.

Further, Applicant submits that one skilled in the art would not use a saturation level for a reference for the device in Nakamura since it would not be possible to account for logarithmic

effects of different pixels at this level. In effect, use of a saturation level would undermine the corrective features of Nakamura.

Claim 2 recites that the “greatest pixel signal value of the output pixel signals is determined” and a “correction is made for each of [the] output pixel signals so that the signal value of each pixel is set at a value which is equal to or greater than [the] greatest pixel signal value.” The Examiner uses similar reasoning as claim 1 in the rejection of claim 2. Because Nakamura does not disclose the optimizing of the reference light or radiation, Applicant submits that the Examiner’s contention that optimizing would have been obviousness is not supported for at least the reasons stated above.

Because claims 3, 4, 9, and 10 recite features similar to claims 1 and 2, Applicant submits that these claims are patentable for at least the reasons given above.

The Examiner has rejected claims 5-8 under 35 U.S.C. § 103(a) as being unpatentable over Nakamura in view of Applicant’s Admitted Prior Art [“AAPA”]. Applicant traverses the rejection.

The Examiner concedes that Nakamura does not disclose the specifics of the solid-state detectors disclosed in claims 5-8, but applies AAPA to cure the deficiency. Because claims 5-8 depend on either claim 3 or 4 and AAPA does not cure the deficient teaching of Nakamura with respect to claims 3 and 4, Applicant submits that claims 5-8 are patentable at least by virtue of their dependency.

7. New Claims

With this Amendment, Applicant adds claims 11-15. Applicant submits that these claims are patentable at least by virtue of the features set forth therein.

8. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Pursuant to 37 C.F.R. § 1.136, Applicant is filing a petition (with fee) for one month of extension time herewith, making this response due on or before March 12, 2004. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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